

U.S. Department of Commerce, Patent and Trademark Office (PTO Form 1449 modified)		Docket No. AMAT/5162	Serial No. 10/024,985
LIST OF PATENTS AND PUBLICATIONS CITED BY APPLICANT		Applicant Shang, et al.	
(Use several sheets if necessary)		Filing Date December 18, 2001	Group Unknown
Examiner Unknown			

U.S. Patent Documents

*Examiner Initial		Document Number	Issue Date	Applicant(s) Name	Class	Subclass	Filing Date If Appropriate
<i>ame</i>	A1	4,058,430	11/15/77	Suntola et al.	156	611	11/25/1975
	A2	4,389,973	06/28/83	Suntola et al.	118	725	12/11/1981
	A3	4,413,022	11/01/83	Suntola et al.	427	255.2	06/21/1979
	A4	4,486,487	12/04/84	Skarp	428	216	04/25/1983
	A5	4,767,494	08/30/88	Kobayashi et al.	156	606	09/19/1986
	A6	4,806,321	02/21/89	Nishizawa et al.	422	245	07/21/1985
	A7	4,829,022	05/09/89	Kobayashi et al.	437	107	12/09/1986
	A8	4,834,831	05/30/89	Nishizawa et al.	156	611	09/04/1987
	A9	4,838,983	06/13/89	Schumaker et al.	156	613	03/18/1988
	A10	4,838,993	06/13/89	Aoki et al.	156	643	12/03/1987
	A11	4,840,921	06/20/89	Matsumoto	437	89	06/30/1988
	A12	4,845,049	07/04/89	Sunakawa	437	81	03/28/1988
<i>ame</i>	A13	4,859,625	08/22/89	Nishizawa et al.	437	81	11/20/1987

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*Examiner Initial		Document Number	Date	Country	Class	Subclass	Translation	
							YES	NO
	B1	01/66832 A2	09/13/2001	WO	C30B	16/44		X
	B2	01/40541 A1	06/07/2001	WO	C23C	16/40		X
	B3	01/36702 A1	05/25/2001	WO	C23C	16/00		X
	B4	01/29893 A1	04/26/2001	WO	H01L	21/768		X
	B5	01/29891 A1	04/26/2001	WO	H01L	21/768		X

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*Examiner Initial		Including Author, Title, Date, Pertinent Pages, Etc.
	C1	Hultman, et al. "Review of the thermal and mechanical stability of TiN-based thin films", <i>Zeitschrift Fur Metallkunde</i> , 90(10) (Oct. 1999), pp. 803-813.
	C2	Klaus, et al. "Atomic Layer Deposition of SiO ₂ Using Catalyzed and Uncatalyzed Self-Limiting Surface Reactions", <i>Surface Review & Letters</i> , 6(3&4) (1999), pp. 435-448.

Examiner

A. Mitchell Howell

Date Considered

01-23-04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

U.S. Department of Commerce, Patent and Trademark Office (PTO Form 1449 modified)					Docket No. AMAT/5162		Serial No. 10024385	
LIST OF PATENTS AND PUBLICATIONS CITED BY APPLICANT					Applicant Shang, et al.		Filing Date December 18, 2001	
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are	A14	4,859,627	08/22/89	Sunakawa	437	81	07/01/1988
	A15	4,861,417	08/29/89	Mochizuki et al.	156	610	03/24/1988
	A16	4,876,218	10/24/89	Pessa et al.	437	107	09/26/1988
	A17	4,927,670	05/22/1990	Erbil	427	255.3	06/22/1988
	A18	4,931,132	06/05/90	Aspnes et al.	156	601	10/07/1988
	A19	4,960,720	10/02/90	Shimbo	437	105	08/24/1987
	A20	4,975,252	12/04/90	Nishizawa et al.	422	245	05/26/1989
	A21	4,993,357	02/19/91	Scholz	118	715	12/21/1989
	A22	5,013,683	05/07/91	Petroff et al.	437	110	01/23/1989
	A23	5,082,798	01/21/92	Arimoto	437	108	09/27/1990
	A24	5,085,885	02/04/92	Foley et al.	477	38	09/10/1990
	A25	5,091,320	02/25/92	Aspnes et al.	437	8	06/15/1990
	A26	5,130,269	07/14/92	Kitahara et al.	437	111	04/25/1989
are	A27	5,166,092	11/24/92	Mochizuki et al.	437	105	10/30/1990

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							YES	NO
	B6	01/29280 A1	04/26/2001	WO	G23C	16/32		X
	B7	01/27347 A1	04/19/2001	WO	G23C	16/44		X
	B8	01/27346 A1	04/19/2001	WO	G23C	16/44		X
	B9	01/15220 A1	03/01/2001	WO	H01L	21/768		X

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*Examiner Initial		Including Author, Title, Date, Pertinent Pages, Etc.
	C3	Yamaguchi, et al., "Atomic-layer chemical-vapor-deposition of silicon dioxide films with extremely low hydrogen content", <i>Appl. Surf. Sci.</i> , Vol. 130-132 (1998), pp. 202-207.
	C4	George, et al., "Surface Chemistry for Atomic Layer Growth", <i>J. Phys. Chem.</i> , Vol. 100 (1996), pp. 13121-131.

Examiner	a. Michelle Cowell	Date Considered	01-23-04
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*Examiner Initial		Document Number	Issue Date	Applicant(s) Name	Class	Subclass	Filing Date If Appropriate	
ame	A28	5,225,366	07/06/93	Yoder	437	108	06/22/1990	
	A29	5,246,536	09/21/93	Nishizawa et al.	156	610	03/10/1989	
	A30	5,250,148	10/05/93	Nishizawa et al.	156	611	11/12/1991	
	A31	5,254,207	10/19/93	Nishizawa et al.	156	601	11/30/1992	
	A32	5,256,244	10/26/93	Ackerman	156	613	02/10/1992	
	A33	5,270,247	12/14/93	Sakuma et al.	437	133	07/08/1992	
	A34	5,278,435	01/11/94	Van Hove et al.	257	184	06/08/1992	
	A35	5,281,274	01/25/94	Yoder	118	697	02/04/1993	
	A36	5,290,748	03/01/94	Knuuttila et al.	502	228	07/16/1992	
	A37	5,294,286	03/15/94	Nishizawa et al.	156	610	01/12/1993	
	A38	5,296,403	03/22/94	Nishizawa et al.	437	133	10/23/1992	
	A39	5,300,186	04/05/94	Kitahara et al.	156	613	04/07/1992	
ame	A40	5,311,055	05/10/94	Goodman et al.	257	593	11/22/1991	
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*Examiner Initial		Document Number	Date	Country	Class	Subclass	Translation	
							YES	NO
	B10	00/79576 A1	12/28/2000	WO	H01L	21/205		X
	B11	00/79019 A1	12/28/2000	WO	C23C	16/00		X
	B12	00/63957 A1	10/26/2000	WO	H01L	21/205		X
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	C5	George, et al., "Atomic layer controlled deposition of SiO ₂ and Al ₂ O ₃ using ABAB... binary reaction sequence chemistry", <i>Appl. Surf. Sci.</i> , Vol. 82/83 (1994), pp. 460-467.						
	C6	Wise, et al., "Diethyldiethoxysilane as a new precursor for SiO ₂ growth on silicon", <i>Mat. Res. Soc. Symp. Proc.</i> , Vol. 334 (1994), pp. 37-43.						
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me	A41	5,316,615	05/31/94	Copel	117	95	03/09/1993	
	A42	5,316,793	05/31/94	Wallace et al.	427	248.1	07/27/1992	
	A43	5,330,610	07/19/94	Eres et al.	117	86	05/28/1993	
	A44	5,336,324	08/09/94	Stall et al.	118	719	12/04/1991	
	A45	5,338,389	08/16/94	Nishizawa et al.	117	89	04/21/1993	
	A46	5,348,911	09/20/94	Jurgensen et al.	117	91	04/26/1993	
	A47	5,374,570	12/20/94	Nasu et al.	437	40	08/19/1993	
	A48	5,395,791	03/07/95	Cheng et al.	437	105	10/20/1993	
	A49	5,438,952	08/08/1995	Otsuka	117	84	01/31/1994	
	A50	5,439,876	08/08/95	Graf et al.	505	447	08/16/1993	
	A51	5,441,703	08/15/95	Jurgensen	422	129	03/29/1994	
	A52	5,443,033	08/22/95	Nishizawa et al.	117	86	03/11/1994	
	A53	5,443,647	08/22/95	Aucoin et al.	118	723 ME	07/11/1994	
me	A54	5,455,072	10/03/95	Bension et al.	427	255.7	11/18/1992	
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*Examiner Initial		Document Number	Date	Country	Class	Subclass	Translation	
	B13	00/54320 A1	09/14/2000	WO	H01L	21/44	YES	NO
	B14	00/16377 A2	03/23/2000	WO	H01L	---		X
	B15	00/15881 A2	03/23/2000	WO	C30B	---		X
	B16	00/15865 A1	03/23/2000	WO	C23C	16/00		X
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	C7	Niinisto, et al., "Synthesis of oxide thin films and overlayers by atomic layer epitaxy for advanced applications", Mat. Sci. & Eng., Vol. B41 (1996), pp. 23-29.						
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APR 08 2002
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amc	A55	5,458,084	10/17/95	Thorne et al.	117	89	12/09/1993
	A56	5,469,806	11/28/95	Mochizuki et al.	117	97	08/20/1993
	A57	5,480,818	01/02/96	Matsumoto et al.	437	40	02/09/1993
	A58	5,483,919	01/16/96	Yokoyama et al.	117	89	08/17/1994
	A59	5,484,664	01/16/96	Kitahara et al.	428	641	01/21/1994
	A60	5,503,875	04/02/96	Imai et al.	427	255.3	03/17/1994
	A61	5,521,126	05/28/96	Okamura et al.	437	235	06/22/1994
	A62	5,527,733	06/18/96	Nishizawa et al.	437	160	02/18/1994
	A63	5,532,511	07/02/96	Nishizawa et al.	257	627	03/23/1995
	A64	5,540,783	07/30/96	Eres et al.	118	725	05/26/1994
	A65	5,601,651	02/11/97	Watabe	118	715	12/14/1994
	A66	5,616,181	04/01/97	Yamamoto et al.	118	723 ER	11/21/1995
amc	A67	5,637,530	06/10/97	Gaines et al.	114	105	06/10/1996


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							YES NO
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	B18	99/29924 A1	06/17/1999	WO	G23C	16/04	X
	B19	99/01595	01/14/1999	WO	C30B	25/14	X
	B20	96/18756 A1	06/20/1996	WO	C23C	16/08	X

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C8	Ritala, et al., "Perfectly conformal TiN and Al ₂ O ₃ films deposited by atomic layer deposition", <i>Chemical Vapor Deposition</i> , Vol. 5(1) (January 1999), pp. 7-9.
C9	Klaus, et al., "Atomically controlled growth of tungsten and tungsten nitride using sequential surface reactions". <i>Appl. Surf. Sci.</i> , Vol 162-163 (2000), pp. 479-491.
Examiner	As Mitchell Lowell
Date Considered	01-28-04

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U.S. Patent Documents								
*Examiner Initial		Document Number	Issue Date	Applicant(s) Name	Class	Subclass	Filing Date If Appropriate	
ame	A68	5,641,984	06/24/97	Aftergut et al.	257	433	08/19/1994	
	A69	5,644,128	07/01/97	Wollnik et al.	250	251	08/25/1994	
	A70	5,693,139	12/02/97	Nishizawa et al.	117	89	06/15/1993	
	A71	5,705,224	01/06/98	Murota et al.	427	248.1	01/31/1995	
	A72	5,707,880	01/13/98	Aftergut et al.	437	3	01/17/1997	
	A73	5,711,811	01/27/98	Suntola et al.	118	711	11/28/1995	
	A74	5,730,802	03/24/98	Ishizumi et al.	118	719	12/27/1996	
	A75	5,747,113	05/05/98	Tsai	427	255.5	07/29/1996	
	A76	5,749,974	05/12/98	Habuka et al.	118	725	07/13/1995	
	A77	5,796,116	08/18/98	Nakata et al.	257	66	07/25/1995	
	A78	5,807,792	09/15/98	Ilg et al.	438	758	12/18/1996	
	A79	5,830,270	11/03/98	McKee et al.	117	106	08/05/1996	
mc	A80	5,835,677	11/10/98	Li et al.	392	401	10/03/1996	
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							YES	NO
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	B22	93/02111 A1	02/04/1993	WO	C08F	4/78		X
	B23	91/10510 A1	07/25/1991	WO	B01J	37/02		X
	B24	0 799 641 A2	10/08/1997	EP	B01J	20/32		X
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*Examiner Initial		Including Author, Title, Date, Pertinent Pages, Etc.						
	C10	Min, et al., "Atomic-layer-deposition of TiN thin films by sequential introduction of Ti precursor and NH/sub3", Symp.: Advanced Interconnects and Contact Materials and Processes for Future Integrated Circuits (Apr. 13-16, 1998), pp. 337-342.						
Examiner <i>a. Mitchell Howell</i>					Date Considered <i>01-23-84</i>			
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ame	A81	5,851,849	12/22/98	Comizzoli et al.	438	38	05/22/1997
	A82	5,855,675	01/05/99	Doering et al.	118	719	03/03/1997
	A83	5,855,680	01/05/99	Soininen et al.	118	719	11/28/1995
	A84	5,858,102	01/12/99	Tsai	118	719	02/14/1998
	A85	5,879,459	03/09/99	Gadgil et al.	118	715	08/29/1997
	A86	5,904,565	05/18/1999	Nguyen, et al.	438	687	07/17/1997
	A87	5,916,365	06/29/99	Sherman	117	92	08/16/1996
	A88	5,923,056	07/13/99	Lee et al.	257	192	03/12/1998
	A89	5,923,985	07/13/99	Aoki et al.	438	301	01/14/1997
	A90	5,925,574	07/20/99	Aoki et al.	437	31	04/10/1992
	A91	5,942,040	08/24/99	Kim et al.	118	726	08/27/1997
	A92	5,947,710	09/07/1999	Cooper, et al.	418	63	06/16/1997
ame	A93	5,972,430	10/26/99	DiMeo, Jr. et al.	427	255.32	11/26/1997

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							YES NO
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	B26	0-344 352 A1	12/06/1989	EP	H01L	39/24	X
	B27	62-091495 A	04/25/1987	JP	C30B	25/02	X

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	C11 Klaus, et al., "Atomic Layer Deposition of Tungsten using Sequential Surface Chemistry with a Sacrificial Stripping Reaction," Thin Solid Films 360 (2000), Pages 145 - 153, (Accepted Nov. 16, 1999).
	C12 Min, et al., "Metal-Organic-Atomic-Layer-Deposition of Titanium-Silicon-Nitride Films", Applied Physics Letters, American Inst. Of Physics, Vol 75(11) (Sept. 13, 1999).
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APR 8 2002
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ame	A94	6,001,669	12/14/99	Gaines et al.	438	102	07/21/1992
	A95	6,015,590	01/18/00	Suntola et al.	427	255.23	11/28/1995
	A96	6,025,627	02/15/00	Forbes et al.	257	321	05/29/1998
	A97	6,036,773	03/14/00	Wang et al.	117	97	03/27/1997
	A98	6,042,652	03/28/00	Hyun et al.	118	719	09/07/1999
	A99	6,043,177	03/28/00	Falconer et al.	502	4	01/21/1997
	A100	6,124,158	09/26/00	Dautartas et al.	438	216	06/08/1999
	A101	6,113,977	09/05/00	Soininen et al.	427	64	09/11/1997
	A102	6,130,147	10/10/00	Major et al.	438	604	03/18/1997
	A103	6,139,700	10/31/00	Kang et al.	204	192.17	09/30/1998
	A104	6,174,377	01/16/2001	Doering, et al.	118	729	01/04/1999
ame	A105	6,174,809	01/16/2001	Kang, et al.	438	682	12/15/1998

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	B29	03-048421	03/01/1991	JP	H01L	21/302		X
	B30	03-286531	12/17/1991	JP	H01L	21/316		X

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	C13 Martensson, et al., "Atomic Layer Epitaxy of Copper on Tantalum", <i>Chemical Vapor Deposition</i> , 3(1) (Feb. 1, 1997), pp. 45-50.
	C14 Ritala, et al., "Atomic Layer Epitaxy Growth of TiN Thin Films", <i>J. Electrochem. Soc.</i> , 142(8) (Aug. 1995), pp. 2731-737.
	C15 Elers, et al., "NbC15 as a precursor in atomic layer epitaxy", <i>Appl. Surf. Sci.</i> , Vol. 82/83 (1994), pp. 468-474.
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Dat Considered 01-23-04	

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	A107	6,203,613	03/20/2001	Gates, et al.	117	104	10/19/1999
	A108	6,207,302	03/27/2001	Sugiura, et al.	428	690	03/02/1998
	A109	6,248,605	06/19/2001	Harkonen, et al.	438	29	06/02/1999
	A110	6,270,572	08/07/2001	Kim, et al.	117	93	08/09/1999
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C17	Martensson, et al., "Atomic Layer Epitaxy of Copper Growth & Selectivity in the Cu (II)-2,2,6,6-Tetramethyl-3, 5-Heptanedion ATE/H ₂ Process", <i>J. Electrochem. Soc.</i> , 145(8) (Aug. 1998), pp. 2926-2931.
Examiner	G. Michelle Gowell
Dat Considered 01-23-01	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

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	B35	2001-62244	03/13/2001	JP	B01D	53/34	X
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	C19 Bedair, "Atomic layer epitaxy deposition processes", <i>J. Vac. Sci. Technol.</i> 12(1) (Jan/Feb 1994)
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Examiner	9. Mitchell Howell
Date Considered	01-23-05

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Examiner Unknown			

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	A5	5,028,565	07/02/1991	Chang, et al.	437	192	08/25/1989
	A6	5,173,474	12/22/1992	Connell, et al.	505	1	03/11/1991
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ame *Connell*Date Considered *01-02-04*

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Examiner <i>A. Michel Corwell</i>					Date Considered <i>01-22-04</i>			
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Examiner Unknown			

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Examiner *R. Michael Lowell* Date Considered *01-22-04*

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		Shang, et al.	Unknown
(Use several sheets if necessary)		Filing Date	Group
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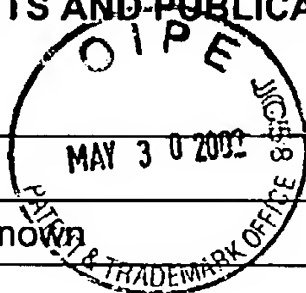
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Examiner A. Michelle Howell Date Considered 01-22-04

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Examiner Unknown			

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Examiner

A. Mitchell Howell

Date Considered

01-22-02

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Examiner Unknown			

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AME	B97	05-175143	07/13/1993	JP	H01L	21/205	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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AME	B120	07-086269	03/13/1995	JP	H01L	21/314	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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a. Mitchell Howell

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01-22-04

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U.S. Department of Commerce Patent and Trademark Office					Socket No.		Serial No.	
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SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS CITED BY APPLICANT					Applicant		Confirmation No.:	
					Shang, et al.		Unknown	
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Examiner Unknown					December 18, 2001		Unknown	
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Examiner <i>G. Michelle Gowell</i>					Date Considered 01-22-04			
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Examiner	Unknown	December 18, 2001	Unknown

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SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS CITED BY APPLICANT		Applicant	Confirmation No.:
		Shang, et al.	Unknown
(Use several sheets if necessary)		Filing Date	Group
Examiner Unknown		December 18, 2001	Unknown
OTHER ART			
*Examiner Initial		Including Author, Title, Date, Pertinent Pages, Etc.	
ame	C1	Ohba, et al., "Thermal Decomposition of Methylhydrazine and Deposition Properties of CVD TiN Thin Films", Conference Proceedings, Advanced Metallization for ULSI Applications in 1993 (1994), pp. 143-149	
ame	C2	Scheper, et al., "Low-temperature deposition of titanium nitride films from dialkylhydrazine-based precursors", Materials Science in Semiconductor Processing 2 (1999), pp. 149-157	
ame	C3	Suzuki, et al., "A 0.2- μ m contact filing by 450°C-hydrazine-reduced TiN film with low resistivity", IEDM 92-979, pp. 11.8.1 - 11.8.3	
ame	C4	Suzuki, et al., "LPCVD-TiN Using Hydrazine and TiCl ₄ ", VMIC Conference (June 8-9, 1993), pp. 418-423	
ame	C5	IBM Tech. Disc. Bull. "Knowledge-Based Dynamic Scheduler in Distributed Computer Control, (June 1990), pp. 80-84	
ame	C6	IBM Tech. Disc. Bull. "Multiprocessor and Multitasking Architecture for Tool Control of the Advanced via Inspection Tools" (May 1992), pp. 190-191	
ame	C7	McGeachin, S., "Synthesis and properties of some β -diketimines derived from acetylacetone, and their metal complexes", Canadian J. of Chemistry, Vol. 46 (1968), pp.1903-1912	
ame	C8	Solanki, et al., "Atomic Layer deposition of Copper Seed Layers", Electrochemical and Solid State Letters, 3(10) (2000), pp. 479-480	
ame	C9	NERAC.COM Retro Search: Atomic Layer Deposition of Copper, dated October 11, 2001	
ame	C10	NERAC.COM Retro Search: Atomic Layer Deposition / Epitaxy Aluminum Oxide Plasma, dated October 2, 2001	
ame	C11	NERAC Search abstract of "Atomic Layer deposition of Ta and Ti for Interconnect Diffusion Barriers", by Rosnagel, et al., J. Vac. Sci. & Tech., 18(4) (July 2000)	
	C12	Abstracts of articles re atomic layer deposition	
ame	C13	Abstracts of search results re atomic layer deposition, search dated January 24, 2002	
ame	C14	Abstracts of articles re atomic layer deposition and atomic layer nucleation	
ame	C15	Abstracts of articles re atomic layer deposition and semiconductors and copper	
Examiner <i>ame</i>		Date Considered 01-22-04	
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